

REMARKS

Claims 1, 3, 4, 9-27 are the pending claims in the application. Claims 1, 18 and 24 have been amended to more particularly point out the subject matter of the invention. Support for the amendment to claim 1 is found throughout the specification and specifically at pages 12-14, paragraphs [0048] through [0060] and in original Claim 24. Claim 24 has been cancelled and Claim 25 has been amended to depend from Claim 1 rather than Claim 24. Claim 18 has been amended to correct an inadvertent minor typographical error. No new matter has been introduced into the claims by these amendments. Reconsideration of the application in light of the amendments above and remarks, which follow, is respectfully requested.

Claim Rejections Under 35 U.S.C. §103 (a)

The Examiner has maintained the rejection of the claims under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,252,649 ("Hausmann"). The Examiner alleges that Hausmann discloses rubber compositions for tire tread members having plasticizer constituents which are fatty acid triglyceride compounds comprising >50% oleic acid triesters and wherein the oleic acid triesters are extracted from vegetable and/or sunflower oil. The examiner further alleges that Hausmann suggests diene elastomers and the claimed mass fraction of the present claims.

The Claimed Invention

The present invention is directed to a cross-linkable or cross-linked rubber composition usable as a tread of a tire, and to a tire incorporating this tread. The rubber composition is based on at least one diene elastomer and a plasticizer which comprises (1) one or more synthetic and/or natural compounds not extracted from petroleum in a mass

fraction of from 45% to 100%, said at least one natural compound is sunflower oil, said sunflower oil comprising at least one glycerol fatty acid triester, wherein as a whole, the fatty acids in the sunflower oil comprise oleic acid in a mass fraction equal to or greater than 70%, wherein the composition comprises from about 10 to about 40 phr of the sunflower oil, (2) one or more paraffinic, aromatic or naphthenic type plasticizing oils extracted from petroleum in a mass fraction of from 55% to 0% and (3) a hydrocarbon plasticizing resin in a quantity of from 5 to 20 phr, wherein said hydrocarbon plasticizing resin is miscible in said diene elastomer(s), has a glass transition temperature of between 10°C and 150°C and a number-average molecular weight of between 400 g/mol and 2000 g/mol.

The Prior Art

Hausmann discloses a plasticizer constituent in a rubber mixture of a tread member of a pneumatic tire which contains at least partially one fatty acid triglyceride, preferably a natural rapeseed oil, in which more than 50% of the fatty acid residues are present as oleic acid residues in an oleic acid/linoleic acid ratio of greater than or equal to 2:1. *See* Abstract. The tires are said to have improved traction upon ice and snow. Hausmann teaches that the tires have a reduced low temperature rigidity and that very small amounts of rapeseed oil achieve such effects. *See* column 4, lines 32-40.

There is no *Prima Facie* Case of Obviousness

The Hausmann patent does not support a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation in the cited references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the

combined references must teach or suggest all the claimed limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and must not be based on the Applicants disclosure. *In re Vaeck*, 947 F2d 488, 20 USPQ 2d 1438 (Fed. Cir. 1991); MPEP 2142.

In this case, Hausmann does not teach all the claim limitations of the present claims. The present claims are directed to a composition for use in a tire tread, which is based on one or more diene elastomers and a plasticizer. The plasticizer of the present claims includes one or more synthetic and/or natural compounds not extracted from petroleum present in a mass fraction of from 45% to 100%, wherein at least one natural compound not extracted from petroleum is sunflower oil which comprises at least one glycerol fatty acid triester. The fatty acids in the sunflower oil comprise oleic acid in a mass fraction equal to or greater than 70% and the composition comprises from about 10 to about 40 phr of the sunflower oil. The plasticizer of the present claims further includes one or more plasticizing oils extracted from petroleum in a mass fraction of from 0% to 55%. The plasticizing oils are selected from the group consisting of paraffinic, aromatic and naphthenic oils. Further, the plasticizer includes a hydrocarbon plasticizing resin in a quantity of from 5 to 20 phr, wherein said hydrocarbon plasticizing resin is miscible in said diene elastomer(s), has a glass transition temperature of between 10°C and 150°C and a number-average molecular weight of between 400 g/mol and 2000 g/mol.

Applicants' claimed invention is not taught or suggested by Hausmann. Hausmann teaches the use of rapeseed oil in the amount of 2-35 phr. See column 3, lines 59-65. It is known in the art that rapeseed oil comprises about 50% of oleic acid and generally not more than 55% oleic acid. See, e.g., Hausmann, column 3, line 10. Hausmann further teaches that

the preferred amount of rapeseed oil in the composition is 4-8 phr (*see* column 3, lines 60-65) and more preferably, 5 phr (*see* column 5, lines 36-40 and Table 2 and Table 1).

In contrast, the present claimed invention requires that the at least one natural compound is sunflower oil which comprises at least one glycerol fatty acid triester. The present claimed invention also requires that the fatty acids in the sunflower oil comprise oleic acid in a mass fraction equal to or greater than 70% and requires that the amount of the sunflower oil in the composition is from 10 to 40 phr. In addition, the claimed invention requires that the plasticizer includes a hydrocarbon plasticizing resin in a quantity of from 5 to 20 phr, wherein said hydrocarbon plasticizing resin is miscible in said diene elastomer(s), has a glass transition temperature of between 10°C and 150°C and a number-average molecular weight of between 400 g/mol and 2000 g/mol.

Nothing in Hausmann teaches or suggests the elements of the present invention mentioned in the preceding paragraph. Specifically, for example, Hausmann does not teach or suggest that the amount of the sunflower oil in the composition is from 10 to 40 phr, or that the fatty acids in the sunflower oil comprise of oleic acid in a mass fraction equal to or greater than 70%. Further, there is absolutely no teaching or suggestion in Hausmann of a hydrocarbon plasticizing resin in a quantity of from 5 to 20 phr, wherein said hydrocarbon plasticizing resin is miscible in said diene elastomer(s), has a glass transition temperature of between 10°C and 150°C and a number-average molecular weight of between 400 g/mol and 2000 g/mol.

Additionally, the use of the sunflower oil in the composition, in which the fatty acids in the sunflower oil comprise oleic acid in a mass fraction equal to or greater than 70%, provides unexpected results. The unexpected results include an increase in the grip

properties on dry ground. These grip properties are also conserved over time. *See e.g.*, paragraph [0020] on page 6 of the specification.

Further, Table 2 on page 31 of the specification provides comparative examples which indicate that the use of a high level of oleic acid (at least 70%) leads to improved processing ability (measured by the Mooney viscosity ML(1+4)) and improved modulus under high elongation (measured by the modulus ME300), compared to a conventional level of oleic acid of about 50%. Specifically, composition I4, which contains sunflower oil high in the level oleic acid, exhibits a better processing ability (indicated by a lower Mooney viscosity) and a better modulus under higher elongation (indicated by a higher modulus ME300), compared to the control composition I5 which contains sunflower oil having normal level of oleic acid of about 50%. Similar results can also be seen in the comparison between composition I9 (contains sunflower oil high in oleic acid) and control composition I10 (contains sunflower oil with normal level of oleic acid). *See* Table 3 on page 33 of the specification. The improved processability is also demonstrated by Example 4 wherein the additional use of a plasticizing resin in compositions I14 to I17 makes it possible to greatly reduce the viscosity compared to the control tread compositions T5 and T6 (see Table 4 – values ML(1+4)). The addition of said plasticizing resin is advantageously permitting to adjust the Tg value of the composition for a better gripping (see paragraphs 0049).

Accordingly, for at least the reasons discussed above, Applicants submit that the Examiner has not established a *prima facie* case of obviousness. Therefore, Applicants respectfully request withdrawal of the rejection of the claims as obvious under 35 U.S.C. § 103(a) in view of Hausmann.

Conclusion

In light of the Amendments and remarks made herein, Applicants believe the present application is in condition for allowance. Accordingly, favorable reconsideration of the application is earnestly solicited. Please send any further correspondence relating to this application to the undersigned attorneys at the address below.

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